

**ABSTRACT**

An image capture system generates an extended effective dynamic range from a signal provided by an image sensor by utilizing an image sensing device having standard photosites with a predetermined response to a light exposure and non-standard photosites with a slower response to the same light exposure. An optical section exposes the image sensing device to image light, thereby causing the image sensing device to generate an image signal and a processing section expands the response of the standard photosites to increased light exposures by utilizing the image signals from neighboring non-standard photosites. Furthermore, the processing section may expand the response of the non-standard photosites to decreased light exposures by utilizing the image signals from neighboring standard photosites. The differential response of the image sensor is provided by a structural element, such as an array of lenslets, a mask or a neutral density filter, overlying the photosites and providing the standard photosites with a predetermined standard response to a light exposure and the non-standard photosites with a slower response to the same light exposure.